AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the captioned application.

Listing of Claims:

Claims 1 – 12: (Cancelled).

Claim 13. (new) A method of operating a seismic survey network comprising the steps of:

a. connecting one or more seismic sensors having respective specific identities to a respective data acquisition module for transmission of seismic data to said respective data acquisition module, said data acquisition module being equipped with a first global positioning system receiver, capable of computing its position and time from received global positioning signals, and with a first clock that said data acquisition module synchronizes by utilizing time signals received from one or more global positioning satellites;

b. at predetermined time intervals, said data acquisition module being operative to transmit digital data packets comprising the instantaneous amplitude value of seismic data received by said data acquisition module, each data packet being further distinguished by the identity of the seismic sensor source of respective data and a first clock time of the moment said respective data is received by said data acquisition module;

c. transmitting said data packets along a first increment of a data transmission route from a first such data acquisition module to an other data processing module;

d. retransmitting said data packets by said other data processing module along a second increment of said data transmission route to a central data processing unit equipped with a second clock;

e. from said central data processing unit, transmitting a clock synchronization signal at predetermined time intervals to said other data processing modules along said transmission route in a transmission direction opposite to said

seismic data packets, said clock synchronization signal corresponding to the time of said second clock; and,

f. retransmitting said clock synchronization signal by said other data processing module to said first data acquisition module.

Claim 14. (new) A method of operating a seismic survey network as described by claim 13 wherein said other data processing module is a second such data acquisition module served respectively, by one or more seismic sensors having respective identities.

Claim 15. (new) A method of operating a seismic survey network as described by claim 13 wherein said data acquisition module compares the time of said first clock to the synchronization signal time of said second clock.

Claim 16. (new) A method of operating a seismic survey network as described by claim 13 wherein said other data processing module is a communication module.

Claim 17. (new) A method of operating a seismic survey network as described by claim 13 wherein said other data processing module is a base line module.

Claim 18. (new) A method of operating a seismic survey network as described by claim 13 wherein said other data processing module is a line tap unit.

Claim 19. (new) A method of operating a seismic survey network as described by claim 13 whereby said first data acquisition module is responsive to said clock synchronization signal to coordinate the time value of said first clock to the time value of said second clock.

Claim 20. (new) A method of operating a seismic survey network as described by claim 13 whereby said data acquisition modules, other data processing modules and the central data processing unit are serially linked by data transmission increments, each of said increments having a predetermined data propagation time interval, the data propagation time intervals of data transmission increments adjacent each module and unit being programmed in the respective module and unit as a reference for an expected signal reception time along the respective increment.

Claim 21. (new) A method of operating a seismic survey network as described by claim 20 whereby the time of said first clock is corrected by the value of a difference between said expected signal reception time and the observed signal reception time according to said first clock.

Claim 22. (new) A method of operating a seismic survey network as described by claim 13 whereby the specific identity of a seismic sensor source of a data packet is implicitly distinguished be the sequential reception order of said data packet by said central data processing unit.

Claim 23. (new) A method of operating a seismic survey network as described by claim 13 having one or more global, regional or local radio beacon receivers, suitable for receiving timing signals, associated with one or more of said clocks.

Claim 24. (new) A method of operating a seismic survey network as described by claim 13 wherein said data acquisition and other data processing modules determine time according to said second clock, create data packets corresponding aid second clock time and annotate the second clock time on the created data packets.

Claim 25. (new) A method of operating a seismic survey network as described by claim 13 wherein said second clock is a master clock of greater precision than said first clock.

Claim 26. (new) A method of operating a seismic survey network as described by claim 25 wherein said first clock is an instrument of less precision than said master clock.

Claim 27. (new) A method of operating a seismic survey network as described by claim 25 wherein said other data processing module comprises a third clock of less precision than said master clock.

Claim 28. (new) A method of operating a seismic survey network as described by claim 27 wherein said third clock is an instrument of greater precision than said first clock.

Claim 29. (new) A method of operating a seismic survey network as described by claim 13 wherein said second clock synchronization signal is facilitated by a second global positioning system receiver associated with said second clock.

Claim 30. (new) A method of operating a seismic survey network as described by claim 29 wherein a facilitating processor associated with said second global positioning receiver communicates global-positioning-system information to said respective data acquisition module over said seismic survey network, said information being utilized by said first global positioning receiver to improve the accuracy of a current time computation.

Claim 31. (new) A method of operating a seismic survey network as described by claim 29 wherein said second global positioning receiver receives global-positioning-system information from said respective data acquisition module over said seismic survey network, said information being utilized by said second global positioning receiver to improve the accuracy of a position computation respective to said respective data acquisition module.

Claim 32. (new) A method of operating a seismic survey network as described by claim 31 wherein said information comprises accumulated received global-positioning-system signals and related data.

Claim 33. (new) A method of operating a seismic survey network as described by claim 31 wherein position coordinates of said respective data acquisition module computed by said second global positioning receiver are communicated to said respective data acquisition module by data packet communication over said seismic survey network.

Claim 34. (new) A method of operating a seismic survey network as described by claim 33 wherein said first global positioning receiver utilizes said position coordinates to compute a best estimate of current time indicated by said second clock utilizing signals it receives from one or more global-positioning-system satellites.

Claim 35. (new) A method of operating a seismic survey network as described by claim 29 wherein said second global positioning receiver communicates information to said respective data acquisition module over said seismic survey network, said information being utilized by said first global positioning receiver to improve its satellite tracking process.

Claim 36. (new) A method of operating a seismic survey network as described by claim 35 wherein said information includes the current and future locations and identifications of available satellites.

Claim 37. (new) A method of operating a seismic survey network as described by claim 29 wherein said first global positioning receiver receives assistance in computing its position or time from said second global positioning receiver, said assistance being enabled by data packet communication over said seismic survey network.

Claim 38. (new) A method of operating a seismic survey network as described by claim 29 wherein said second global positioning receiver communicates global-positioning-system information to said respective data acquisition module over said seismic survey network, said information being utilized by said first global positioning receiver to improve the accuracy of its computation of its own position.

Claim 39. (new) A seismic survey network comprising a plurality of seismic data acquisition modules and a central data processing unit; said seismic data acquisition modules having a first global positioning system receiver, capable of computing its position and time from received global positioning signals and a first clock; said central data processing unit having a second clock and a second global positioning system receiver and facilitating processor associated with said second clock, each of said data acquisition modules being a data processing module having one or more seismic sensors with respective specific identities operatively connected thereto for transmission of seismic data to the respective data acquisition module; said data acquisition modules being programmed to convert instants of seismic data values at predetermined time intervals to signal transmissions in the form of digital data packets that are respectively distinguished by the first clock time of the instant that respective seismic data is received and by the specific identity of the seismic sensor source of said data; data packets generated by a first data acquisition module being transmitted along a transmission route that includes receipt and retransmission of said data packets by at least one other data processing module prior to receipt by said central data processing unit, said central data processing unit having means to transmit clock synchronization signals to said other data processing module and said other data processing module having means for retransmission of said synchronization signals along said transmission route in a transmission direction opposite from said data packets.

Claim 40. (new) A seismic survey network as described by claim 39 wherein said one other data processing module is a second data acquisition module.

Claim 41. (new) A seismic survey network as described by claim 39 wherein said one other data processing module is a communication module.

Claim 42. (new) A seismic survey network as described by claim 39 wherein said one other data processing module is a base line module.

Claim 43. (new) A seismic survey network as described by claim 30 wherein said one other data processing module is a line tap unit.

Claim 44. (new) A seismic survey network as described by claim 39 wherein said clock synchronization signal corresponds to the time of said second clock for transmission to said other data processing modules along said data transmission route.

Claim 45. (new) A seismic survey network as described by claim 39 wherein said first data acquisition module comprises means responsive to said clock synchronization signal to coordinate the time value of said first clock to the time value of said second clock.

Claim 46. (new) A seismic survey network as described by claim 39 wherein said transmission route comprises a plurality of data transmission increments serially linking respective data acquisition modules, other data processing modules and central data processing unit, each of said increments having a predetermined data propagation time interval, the data propagation time intervals of data transmission increments adjacent each module and unit being programmed in the respective module and unit as a reference for a expected signal reception time along the respective increment.

Claim 47. (new) A seismic survey network as described by claim 39 wherein the specific identity of a seismic sensor source of a data packet is implicitly distinguished by the sequential reception order of said data packet by said central data processing unit.

Claim 48. (new) A seismic survey network according to Claim 39 in which said first global positioning receiver is constructed with less capability and at less cost and with lower power consumption than said second global positioning receiver.

Claim 49. (new) A seismic survey network according to Claim 39 further having one or more global, regional or local radio beacon receivers, suitable for receiving timing signals, associated with one or more of said clocks.

Claim 50. (new) A seismic survey network according to Claim 39 wherein said data acquisition and other data processing modules are equipped with means for determining time according to said second clock, for creating data packets corresponding to said second clock time and for annotating the second clock time on the created data packets.

Claim 51. (new) A seismic survey network according to Claim 39 wherein said data acquisition and other data processing modules are equipped with means for receiving synchronization signals emanating from said central control module and determining time according to said second clock, for retransmitting said synchronization signals and for annotating the second clock time on synchronization signals originated and retransmitted by said modules.

Claim 52. (new) A seismic survey network as described by claim 39 wherein said second clock is a master clock of greater precision than said first clock.

Claim 53. (new) A seismic survey network as described by claim 52 wherein said first clock is an instrument of less precision than said master clock.

Claim 54. (new) A seismic survey network as described by claim 52 wherein said other data processing module comprises a third clock of less precision than said master clock.

Claim 55. (new) A seismic survey network as described by claim 54 wherein said third clock is an instrument of greater precision than said first clock.

Claim 56. (new) A seismic survey network as described by claim 39 wherein said second global positioning receiver is utilized to communicate respective global-positioning system information to respective said data acquisition modules over said seismic survey network and said first global positioning receivers utilize said information to improve the accuracy of their computation of current time.

Claim 57. (new) A seismic survey network as described by claim 39 wherein said second global positioning receiver and facilitating processor receives global-positioning-system information from said data acquisition modules over said seismic survey network, said information being utilized by said second global positioning receiver and facilitating processor to improve the accuracy of its computation of the positions of said data acquisition modules.

Claim 58. (new) A seismic survey network as described by claim 57 wherein said information comprises accumulated received global-positioning-system signals and related data.

Claim 59. (new) A seismic survey network as described by claim 57 wherein position coordinates of said data acquisition modules computed by said second global positioning receiver or said facilitating processor are communicated to said respective data acquisition module by data packet communication over said seismic survey network.

Claim 60. (new) A seismic survey network as described by claim 59 wherein said first global positioning receivers or said data acquisition modules utilize said position coordinates to compute a best estimate of time utilizing signals they receive from one or more global-positioning-system satellites.

Claim 61 (new) A seismic survey network as described by claim 39 wherein said second global positioning receiver and facilitating processor communicate information to said data acquisition modules over said seismic survey network, said information being utilized by said first global positioning receivers to improve their satellite tracking processes.

Claim 62. (new) A seismic survey network as described by claim 61 wherein said information includes the current and future locations and identifications of available satellites.

Claim 63. (new) A seismic survey network as described by claim 39 wherein said first global positioning receiver receives assistance in computing its position or time from said second global positioning receiver and facilitating processor, said assistance being enabled by data packet communication over said seismic survey network.

Claim 64. (new) A seismic survey network as described by claim 39 wherein said second global positioning receiver and facilitating processor communicate global-positioning-system information to said data acquisition module over said seismic survey network, said information being utilized by said first global positioning receiver to improve the accuracy of its computation of its own position.

Claim 65 (new) A seismic survey network as described by claim 39 wherein said first global positioning receiver is an assisted global positioning receiver that relies on network-communicated assistance from said second global positioning receiver or its facilitating processor to determine accurate time and/or position coordinates.